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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/817,141	04/02/2004	John L. Stoffel	200400537-1	1498

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FORT COLLINS, CO 80527-2400

EXAMINER
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CORDRAY, DENNIS R

ART UNIT	PAPER NUMBER
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1731

MAIL DATE	DELIVERY MODE
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06/21/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/817,141

Applicant(s)

STOFFEL ET AL.

Examiner

Dennis Cordray

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 5-13, 16-21 and 25-48 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1, 5-11, 21, 29-42 and 48 is/are allowed.
- 6) ☒ Claim(s) 12, 13, 16-20, 27, 28 and 43-46 is/are rejected.
- 7) ☒ Claim(s) 25, 26 and 47 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's amendments filed 4/2/2007 have overcome the rejection of Claims 1, 5-11 and 21 over Cousin et al. Accordingly, the rejection has been withdrawn.

Claim 14 was previously indicated as being objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The potential allowability of the limitations contained in previous claim 14 is withdrawn in view of a modified interpretation of a previously cited reference, as discussed in the rejections below.

Applicant's arguments with respect to Cousin et al have been fully considered but they are not persuasive.

Applicant argues on p 14 that Cousin et al teach a guanidine-formaldehyde polymer but do not teach a cationic guanidine polymer compound as recited in the claims. Cousin et al teach that a commercially available cationic polymer useful in the disclosed invention is a guanidine-formaldehyde polymer (col 5, lines 15-18). It is considered by the Examiner that a cationic guanidine-formaldehyde polymer is a species of and thus anticipates the genus "a cationic guanidine polymer compound."

Applicant further argues that one skilled in the art would not use a guanidine-formaldehyde polymer of Cousin et al in place of a cationic guanidine polymer of Nigam having the claimed structure, or vice versa, because the formaldehyde would change the reactivity and chemical characteristics. Cousin et al teaches that the cationic

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polymer insolubilizes the dye in the ink to the paper (col 2, lines 58-60; col 3, lines 11-15). The cationic polymer forms a network of polymeric bridges between the substrate and the dye (binds the dye to the substrate) and tends to improve water fastness and reduce feathering (col 3, lines 27-31). Nigam ('112) teaches that the guanidine polymer binds dyes to the substrate, creating a water fast and bleed resistant image (p 5, par 60). Thus the guanidine polymers disclosed by Cousin et al, and Nigam ('112) were known at the time of the invention to provide the same properties of fixing dyes and imparting water fastness to a paper. The fact that both polymers were known for the same use in the art presents strong evidence of obviousness in substituting one for the other as a functionally equivalent option. An express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. In re Fout, 675 F.2d 297, 213 USPQ 532 (CCPA 1982).

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action: The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 12-13, 18-20, 27-28 and 43-46 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Cousin et al (4554181).

Cousin et al discloses an ink jet recording sheet (print medium or printing paper) having a surface that includes a combination of a water-soluble polyvalent metal salt and a cationic polymer (Abs). The paper can be a paper, synthetic paper or plastic film formed using any commercially available pulp (col 6, lines 12-13 and 29-41), thus has a fibrous substrate. The salts include  $\text{Al}^{3+}$ ,  $\text{Mg}^{2+}$  and  $\text{Ca}^{2+}$  salts combined with acid ions. Although not the preferred ions, chlorides and nitrates are nevertheless usable (col 5, lines 46-53 and 62-64), thus calcium nitrate and magnesium chloride are anticipated. A suitable commercially available cationic polymer is a guanidine-formaldehyde polymer (col 5, lines 15-18). It is considered by the Examiner that a cationic guanidine-formaldehyde polymer is a species of and thus anticipates the genus "a cationic guanidine polymer compound." Cousin et al teaches that the cationic polymer insolubilizes the dye in the ink to the paper (col 2, lines 58-60; col 3, lines 11-15). The cationic polymer forms a network of polymeric bridges between the substrate and the dye (binds the dye to the substrate) and tends to improve water fastness and reduce feathering (col 3, lines 27-31).

Claims 19-20: Examples are given of papers made comprising the cationic polymer and metal salt (cols 10-13, Examples 1-7).

Cousin et al discloses a method for making paper (print media) wherein the cationic polymer and metal salt is applied by coating an aqueous composition on a formed sheet capable of sustaining its own weight by spraying, dipping or a size press. Cousin et al discloses that the cationic polymer and metal salt cannot be suitably added to the paper at the wet end of the process or the polymer will act as a retention aid and be unable to insolubilize the dye. While size press addition is particularly convenient, application can be at anytime after the paper has been dewatered or has left the wire (col 6, lines 14-15 and 47-56), thus the application can occur on a drained but undried paper prior to the size press, which is a surface sizing process. Introducing and mixing the cationic guanidine polymer and metallic salt with the substrate are performed by the coating process. The steps of providing a fibrous component, providing the cationic guanidine polymer and metal salt, and forming the substrate are inherent in the process or, at least, would have been obvious to one of ordinary skill in the art.

Cousin et al does not explicitly disclose that the guanidine compound and metallic salt are disposed within the fibrous component of the substrate. Because paper is a porous substrate, the aqueous coating penetrates into the surface to some extent, or at least it would have been obvious to one of ordinary skill in the art to expect the coating to penetrate into the surface, thus the cationic polymer and metal salt is disposed within at least part of the fibrous component of the substrate.

Claims 19 and 20 are product-by-process claims. The product of Cousin et al appears to be the same as or similar to the claimed product, a paper containing a cationic guanidine polymer compound and a metallic salt, although produced by a

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different process. The burden therefore shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir.1983). "In the event any differences can be shown for the product of the product-by-process claims 19 and 20 as opposed to the product taught by the reference Cousin et al, such differences would have been obvious to one of ordinary skill in the art as a routine modification of the product in the absence of a showing of unexpected results: see also In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985)"

3. Claims 12 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cousin et al (4554181) in view of Nigam (US 2003/0087112 A1).

The disclosure of Cousin et al is detailed in the immediately preceding rejection. Cousin et al does not disclose cationic guanidines having monomer units described by structural formulae I and II.

Nigam ('112) discloses a fibrous substrate for printing (print medium including printing paper, writing paper, drawing paper and board materials) treated with a guanidine polymer as an image enhancing agent (Abstract; p 8, par 89). The guanidine polymer binds dyes to the substrate, creating a water fast and bleed resistant image (p 5, par 60). The guanidine polymer is applied as an internal or external sizing as an aqueous composition, thus the polymer application can be to a pulp, a wet paper or a dry paper (p 7, par 79; p 8, pars 89, 91, 94-95). The sizing process saturates the paper

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to various extents, thus guanidine polymer is disposed within the fibrous component of the substrate (p 8, par 94).

Nigam ('112) discloses that the guanidine polymers comprise the claimed guanidine structures I and II (p 5, pars 56-59).

The art of Cousin et al, Nigam ('112) and the instant invention is analogous as pertaining to printing papers treated with guanidine polymers. The guanidine polymers disclosed by Cousin et al, Nigam ('112) provide the same properties of fixing dyes and imparting water fastness to a paper. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a guanidine polymer having monomeric units described by structural formulae I and II to treat the paper of Cousin et al in view of Nigam ('112) as a functionally equivalent option to provide bleed-resistant and water-fast images.

Cousin et al teaches that the guanidine polymers cannot be added in the wet end of the papermaking process, while Nigam teaches that treatment of the pulp (internal sizing) is possible. Since Nigam post dates Cousin et al, it would have been obvious to one of ordinary skill in the art to add the guanidine polymer and salt to the papermaking pulp or to a wet paper (prior to a surface sizing process) as functionally equivalent options.

4. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cousin et al (4554181) in view of Nigam (6291023 B1).



The disclosure of Cousin et al is used as above. Cousin et al does not disclose cationic guanidines having monomer units described by structural formulae I and II.

Nigam ('023) discloses a coated paper for ink-jet printing (print medium) that comprises a fibrous substrate and a coating containing a guanidine polymer (Abstract; col 1, line 66 to col 2, line 5; col 2, lines 55-67). The fibrous substrate can be partially or wholly saturated with the coating (col 2, lines 65-66).

Nigam ('023) discloses the claimed guanidine structures I and II (col 8, line 40 to col 9, line 20). Nigam also teaches that additional components that may be desirable for use in the coating compositions are known to those skilled in the art or are described in pertinent texts and literature (e.g.-prior patents).

Nigam ('023) discloses a process wherein the coating composition is applied by any conventional coating process, including surface coating and saturation techniques. The coating can infiltrate the paper, thus can be disposed within the fibrous component of the substrate (col 13, lines 16-50). Textiles suitable for the coating include those made from natural or synthetic fibers (col 12, lines 47-53). The guanidine polymer reacts with a dye to bind it to the substrate and create water-fast, bleed resistant high quality images (Abs; col 2, lines 10-25; col 9, lines 22-26).

Nigam ('023) discloses printing media produced using the coating composition and used for ink-jet printing (cols 19-20, Example 3).

The art of Cousin et al, Nigam ('023) and the instant invention is analogous as pertaining to printing papers treated with guanidine polymers. The guanidine polymers disclosed by Cousin et al and Nigam ('023) provide the same properties of fixing dyes

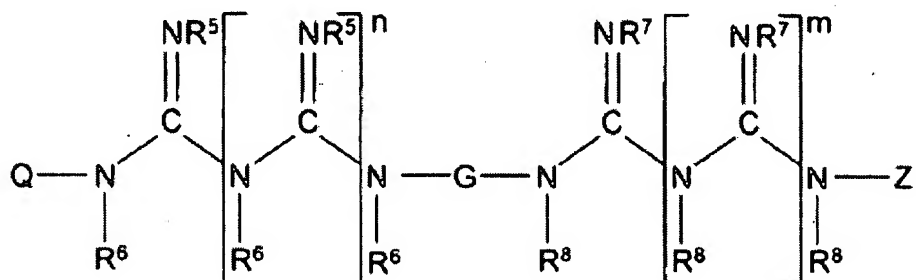
and imparting water fastness to a paper. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a guanidine polymer having monomeric units described by structural formulae I and II to treat the paper of Cousin et al in view of Nigam ('023) as a functionally equivalent option to provide bleed-resistant and water-fast images.

***Allowable Subject Matter***

5. Claims 1, 5-11, 21, 29-42 and 48 are allowed.
6. Claim 25-26 and 47 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding Claims 1, 5-11, 21, 26 and 48, the prior art requires a polyvalent metallic salt, whereas sodium chloride is a monovalent salt, which would not be expected to function similarly to a polyvalent salt.

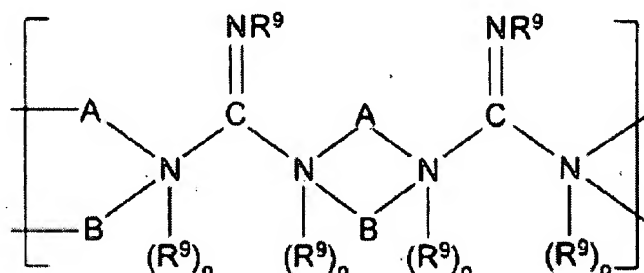
Regarding claims 21, 25 and 29-42, guanidine polymers of the general formula



shown on p 10 of the instant Specification are disclosed in prior art (see Nigam '539, p 10, par 165 and Nigam '023, col 8, line 40 to col 9, line 21), wherein the group G is a

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straight or branched alkyl, alkenyl or alkynyl group, substituted or unsubstituted. The claimed polymers of the form



are not disclosed or made obvious by the prior art.

Regarding the metallic salt of Claims 22 and 26, the prior art requires a polyvalent metallic salt, whereas sodium chloride is a monovalent salt, which would not be expected to function similarly to a polyvalent salt.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Cordray whose telephone number is 571-272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
DRC

  
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